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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/506,533	02/17/2000	Nicholas J. DeCristofaro	30-4519CIP1(4710)	7488

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EXAMINER

TAMAI, KARL I

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 04/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/506,533

Applicant(s)

DECRISTOFARO ET AL.

Examiner

Tamai IE Karl

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) 37-50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

Election/Restrictions

1. This application contains claims 37-50 drawn to an invention nonelected with traverse in Paper No. 7. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Drawings

2. The objection to the drawings under 37 CFR 1.83(a) is withdrawn.

Claim Rejections - 35 USC § 112

3. The rejection of Claim 1-36 under 35 U.S.C. 112, first paragraph, is withdrawn.
4. The rejection of Claim 36 under 35 U.S.C. 112, second paragraph, is withdrawn.

Claim Rejections - 35 USC § 102

5. The rejection of Claim 36 under 35 U.S.C. 102(b) is withdrawn.

Claim Rejections - 35 USC 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. Claims 1, 2, 3, 8, 19-22, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over German Patent 28 05 438('438) and Mischler et al.(Mischler) (4255684). '438 teaches a stator for a motor having a plurality of segments(one pole section and one backiron section) where the flux must cross an air gap between free ends of a tooth section 3 and a back iron section 2. Each of the back iron sections having a top and bottom surface which has a line normal to the surface being perpendicular to the axis of rotation of the rotor. '438 teaches an stator core secured by being pressed into a housing or belted together(outer restraining member) and having self adhesive foil spacers(inner member). '438 teaches the tooth sections 3 being generally straight and the backiron sections 2 being generally bent. '438 does not teach the stator metal being an amorphous metal. Mischler teaches a stator for a motor with a plurality of segments formed from amorphous metal. Mischler teaches a rotor 22 supported within the stator. It is inherent that motor includes a means to support the rotor. It would have been obvious to a person skilled in the art at the time of the invention to construct the stator of '438 with the metal being an amorphous metal because Mischler teaches that amorphous metal is inexpensive to produce and has low magnetic losses.

Regarding claims 19-21, the heat treatment, application of a magnetic field, and annealing are method of making limitation that is not germane to the patentability of the apparatus.

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8. Claims 4, 5, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over '438 and Mischler, in further view of Thomas(US 2556013). '438 teaches the wedges 7 having a self adhesive to bond the teeth sections 3 and the back iron sections 2, where the adhesive does not include the first free end 5. The self adhesive inherently covering a substantial portion of the stator, such that the adhesive bonds to both the tooth and the backiron sections. '438 and Mischler teach every aspect of the invention except, a steel band peripherally around the stator. Thomas teaches a steel band 2 to secure a laminated stator core 3. It would have been obvious to a person skilled in the art at the time of the invention to construct the stator of '438 and Mischler with the steel band of Thomas because steel has a good tensile strength and because '438 teaches the stator core is secured in a frame.

9. Claims 6, 7, 24, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over '438, Mischler, and Thomas, in further view of Laing(US 3591819). '438, Mischler, and Thomas teach every aspect of the invention except the bonding material being an epoxy resin and the inner restraining member being a bonding material and a metal band. Laing teaches a laminated stator having a plurality of sections, where the sections are held together by an synthetic resin and a rivet. The examiner takes official notice that an epoxy resin is well known synthetic resin in the motor art. It is inherent that the rivet is metal. It would have been obvious to a person skilled in the art at the time of the invention to construct the stator of '438, Mischler, and Thomas with the bonding material being an resin because Laing teaches that synthetic

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resins are a known binding material between stator lamination sections, with the resin being an epoxy resin because it is easily molded around the laminations, and with the rivet(banding) securing the tooth laminations together because Laing teaches that both a rivet and resin are used to secure the laminations together.

10. Claim 9 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over '438 and Mischler, in further view of Frischmann(US 4197146). '438 and Mischler teach every aspect of the invention except the specific atomic composition of the amorphous metal. Frischmann teaches the amorphous metal can made up of ONE OR MORE OF THE FOLLOWING: Fe, Ni, or Co from 70-90% which can be replace by Mo, W, Cr, and V from 70-90%, and C, B,P from 10-30% which can be replaced by Al, Sn, Sb, Ge, In and Be from 10-30%(which includes Si, Al, and Ge between 5-20%). Frischmann teaches that the elements within the group are interchangeable and that more than one could be used, which includes Y+Z replaced by In, Sn, or Sb. Frischmann teaches an impurity of C being 0-2% which includes the range of 0-1%. It would have been obvious to a person skilled in the art at the time of the invention to construct the stator of '438 and Mischler with MYB composition with M replaced by up to 10% Mo, W, Cr, or V because Frischmann teaches that more than one M element may be used, with the (Y+Z) replaced by In, Sn, or Sb because Frischmann teaches that more than one Y and Z elements can be used, and because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

11. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over '438, Mischler, and Frischmann, in further view of Datta et al.(Datta)(US 4,409,041). '438, Mischler, and Frischmann teach every aspect of the invention except the FeBSi formula. Datta teaches the FeBSi formula with the ranged and number claimed by the applicant. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the stator of '438, Mischler, and Frischmann with the amorphous material as set forth in claims 10 and 11, because Datta suggests the disclosed range and because Datta suggests the disclosed range to enhance the magnetic properties.

12. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over '438, Mischler, and Frischmann, in further view of Vernin et al.(Vernin)(US 5,922,143). '438, Mischler, and Frischmann teach every aspect of the invention except nanocrystalline microstructure. Vernin teaches that a nanocrystalline structure is suitable for magnetic cores. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the stator of '438, Mischler, and Frischmann with the heat treated nanocrystal microstructure because Vernin teaches the nanostructure is good for magnetic cores.

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13. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over '438, Mischler, Frischmann, and Vernin, in further view of Yoshizawa et al.(Yoshizawa)(US 4881989). '438, Mischler, Frischmann, and Vernin teach every aspect of the invention except composition of claims 13 and 14. Yoshizawa teaches the composition with similar atomic ranges. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the stator of '438, Mishcler, Frischmann, and Vernin with the amorphous composition of claims 13 and 14 because Yoshizawa teaches the components combine to make an amorphous material with excellent magnetic qualities, and in the specific range because a person of ordinary skill in the art would attempt to optimize the atomic composition to provide the best magnetic material.

14. Claims 15 –18, 26-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over '438 and Mischler. '438 and Mischler teach every aspect of the invention except the core loss and frequency range of the magnetic material. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the stator core of '438 and Mischer with the core loss with the formula of claim 15, at 1 for 60 Hz, 12 for 1000 Hz, or 70 at 20000 Hz to optimize the magnetic characteristics of the amorphous material.

Claims 28-30 are method of making limitations which are not germane to the patentability of the apparatus.

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15. Claims 19-21 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over '438 and Mischler, in further view of Clark et al.(Clark)(US 4,763,030). '438 and Mischler teaches every aspect of the invention, except the heat treatment, application of a magnetic field, and annealing the segments. Clark teaches amorphous metal being a continuous cooled after annealed in a magnetic field. It would have been obvious to a person skilled in the art at the time of the invention to construct the stator of '438 and Mischler with the segments continuously annealed then cooled in a magnetic field, as in Clark, to improve the magnetomechanical coupling factors of the amorphous metal.

16. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mishler et al.(4255684) and Takeuchi. Mishler teaches every aspect of the invention except the specific core loss of the material. Takeuchi teaches the amorphous stator that has lines normal to the axis of rotation an any points from the upper and lower surfaces along the backiron portion of the core. Takeuchi suggests an amorphous core with low loss magnetic core with to provide a productive magnetic core. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the machine of Mishler with a low loss core to provide a productive magnetic core(as taught by Takeuchi), and with the formula of claim 36 because it is merely defining the optimum magnetic characteristics suggested by Takeuchi.

Response to Arguments

17. Applicant's arguments filed 2/1/02 have been fully considered but they are not persuasive. The Applicant's arguments that '438 is not amorphous metal is not persuasive. It would have been obvious to a person skilled in the art at the time of the invention to construct the stator of '438 with the metal being an amorphous metal because Mischler teaches that amorphous metal is inexpensive to produce and has low magnetic losses(as set forth above). The Applicant's argument that the pole shoes and back iron sections of '438 do not conform to the claimed invention is not persuasive. Each SEGMENT of '438 includes a tooth section 3 and a back iron section 2, such that each SEGMENT includes an inner and outer surface at the backiron section 2 that is normal to the axis of rotation, with an air gap between sections 2 and 3. The Applicant's arguments that the claimed stator segments are only possible in light of the Applicant's specification is not persuasive, as '438 teaches the structure except for the amorphous material that is taught by Mishler. The Applicant's argument that Mishler must have a continuous magnetic circuit is not persuasive. First because there is no such limiting teaching in Mishler. Second because Mishler teaches the equivalence of steel stripe and amorphous tape, such that a person of ordinary skill in the art is merely choosing between know equivalents(as taught by Mishler) when making the stator of '438 from amorphous tape. The Applicant's arguments regarding the rotor with an air gap is not persuasive, because the limitation is part of the non-elected/non-examined claims. The Applicant's argument that heat treating or annealing changes the magnetic properties of the material is not persuasive. Heat treating/annealing is a method of

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making limitation which may or may not alter the magnetic properties. The different microstructures of the amorphous materials are not claimed to set forth in the specification. The rejection over Mischler and '438 are proper and maintained.

The Applicant's argument that Thomas cannot be combined with '438 because it is not amorphous metal or radially laminated is not persuasive. '438 suggests the stator is secured by a frame and Thomas teaches the frame 2 is an outer protective member for the core. Therefore the combined teaching of '438 and Thomas teach a core('438) which is protected by a steel frame(Thomas). The rejection is proper and maintained.

The Applicant's argument that Laing does not add to the teachings of '438, Thomas, and Mischler is not persuasive. The Applicant is viewing the references by itself rather than in combination with the other references(see *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986) holding that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references). Laing clearly adds to the other references because it teaches that both a rivet and resin are used to secure the laminations together. The Applicants argument regarding Frischman and Datta are not persuasive. The Applicant is merely optimizing the know parameters of amorphous metal as set forth by Frischman and Datta, which is within the ordinary skill in the art(see *In re Aller*, supra). The Applicant's that Vernin has no suggestion to combine with motors or an amorphous core is not persuasive. Vernin is not limited to torriodal core or any specific application, but teaches the nanocrystalline structure for magnetic cores and circuits, particularly amporphous cores to provide good magnetic

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permeability and hysteresis loops. The Applicant's argument that Yoshizawa does not teach a magnetic core of a motor is not persuasive because Yoshizawa teaches a nanocrystalline core for magnetic devices because the nanocrystalline structure provides excellent magnetic properties, and a motor is in the same field of endeavor as magnetic device with an amorphous core. The Applicant's argument regarding claims 15-18 and 26-33 is not persuasive because the Applicant is merely optimizing the magnetic characteristics, which the examiner agrees is extrinsic, to provide the best or most efficient magnetic core. The Applicant's argument regarding Clark, Yoshizawa, and Vernin as not being directed to motors is not persuasive. The Applicant is view the references individually rather than the combined teaching of the references(*In re Merck and Co*, Supra.). Mischler teaches that amorphous magnetic material is good for motors because of the low core loss. Clark, Yoshizawa, and Vernin merely support Mischler to teach various elements of the amorphous material in magnetic cores. The rejections are proper and maintained.

Conclusion

18. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

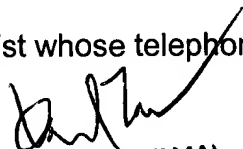
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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl I.E. Tamai whose telephone number is (703) 305-7066.

The examiner can be normally contacted on Monday through Friday from 8:00 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Nestor Ramirez, can be reached at (703)308-1371. The facsimile number for the Group is (703)305-3432.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.



KARL TAMAI
PRIMARY EXAMINER

Karl I Tamai
PRIMARY PATENT EXAMINER
April 16, 2002